

Notes 2/6 - Solving Exponential Eqs.

Step 1: Both sides of the equation must have the same base. Rewrite one or both sides if necessary.

Step 2: Set exponents equal to each other. (Ignore the base!)

Step 3: Solve equation from step 2.

Examples:

1) $4^{x+2} = 4^5$

S1 ✓

S2 $x+2 = 5$
-2 -2

S3

$x = 3$

2) $2^{3x+1} = 8$

S1

$2^{3x+1} = 2^3$

S2

$3x+1 = 3$

-1 -1

$3x = 2$

S3

$x = \frac{2}{3}$

3) $4^3 = 8^{x+1}$

* 4 and 8 are powers of 2.

S1: $(2^2)^3 = (2^3)^{x+1}$ • simplify by multiplying exponents

$2^6 = 2^{3(x+1)} = 2^{3x+3}$

S2:

$6 = 3x+3$

-3 -3

$3 = 3x$

S3:

$x = 1$